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### Beyond **Polyarchy**:

... Following Hill, we conceive these three dimensions as the extension of Dahl's concept of **polyarchy**.<sup>[1]</sup> In the second part we develop an indicator of ...

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### **Polyarchy visualization**

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**Johnson, B. and Shneiderman, B. (1991) *Tree-maps: A space-filling approach to the visualization of hierarchical information structures*, Proc. IEEE Visualization '91 (1991), 284 -- 291, IEEE, Piscataway, NJ.**

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[The Challenge of Visualising Multiple Overlapping... - Martin Graham Jessie \(1999\) \(Correct\)](#)

....are that the important parts, the files, are always on top and visible, as they form the leaves of the tree. **Also enough of the underlying directories are still visible to obtain a view of the whole structure. Other IV hierarchy visualisations include Johnson and Shneiderman s Treemaps [11] for efficient use of screen space, Rapley and Kennedy s WINONA [12] for objectoriented database visualisation, and Herman s visual tree path navigation [13] 2.2.2 Node and Link structures (Graphs Networks) The second structure that accommodates a large variety of abstract information sets ....**

....sizes, as well as individual nodes. **Knowledge of the other nodes or subtrees with which it shares relations in each version of a hierarchy will hint at the methodology behind that particular classification. Turo and Johnson s visualisation technique, based on Johnson and Shneiderman s Treemaps [11], also includes an option to visualise change in trees or sub trees over time, again using the small multiple approach.** However, the changes they are concerned with are to do with information attached to individual nodes, rather than changes in the structure of the hierarchy. **The main ....**

Johnson, B. and Shneiderman, B., *Treemaps: A SpaceFilling approach to the visualization of hierarchical information structures*, in Proc. IEEE Visualization '91, pp. 284-291, San Diego, IEEE Computer Society Press.

---

[A Comparison of Set-Based and Graph-Based Visualisations.. - Graham, Kennedy, Hand \(Correct\)](#)

....et al. s research on Group Asynchronous Browsing on the WWW [29] is probably the closest work in concept to the problem we are tackling. **It combines the graph structure of Multitrees, which is used to amalgamate a number of bookmark structures, with a small multiple Treemap based visualisation [14] of the separate bookmark hierarchies.** Treemaps is itself a space efficient method for displaying single hierarchies, and works by recursively dividing a given area according to the hierarchy s structure. **The whole visualisation runs under the Pad zooming user interface environment. 1] It can ....**

Johnson, B. and Shneiderman, B. *Treemaps: A SpaceFilling approach to the visualization of hierarchical information structures*. Proc. of IEEE Visualization '91 (San Diego, California, USA, Oct 22-25, 1991), IEEE Computer Society Press, 284-291.

---

[Visualising Multiple Overlapping Classification Hierarchies - Graham \(Correct\)](#)

....notes, it is a hierarchy s very ability to store large amounts of information efficiently that consequently makes them difficult to visualise. **Also aware that traditional nodelink tree diagrams wasted approximately 50 of the available screen space, Johnson and Shneiderman developed Treemaps [96] as a space efficient approach to increase the size of trees that could be displayed legibly on screen. Figure 2.2. Treemap layout, with colour indicating common attributes. HCIL. Treemaps, an example of which is shown in Figure 2.2, uses the nested box representation in which an area on screen ....**

....the Continuous Zoom by Bartram et al. [11] where an object s absolute co ordinates depend on their neighbours positioning, rather than any global transformation function. **Specific examples involving hierarchical structures are, for the former, Hyperbolic Trees [110] and for the latter, TreeMaps [96].** These relative layout techniques depend on functions called Degrees Of Interest (DOI) associated with objects in the visualised structure e.g. for TreeMaps the DOI is traditionally the relative size of files within a visualised directory structure. **Furnas [65] described a DOI as a function ....**

[Article contains additional citation context not shown here]

Johnson, B. and Shneiderman, B. (1991). *Treemaps: A Space-Filling approach to the visualization of hierarchical information structures*. Proc. of IEEE Visualization '91 (Oct 22-25, San Diego, California, USA), IEEE Computer Society Press, 284-291.

---

#### Combining Linking Focusing Techniques for a Multiple.. - Martin Graham And (2001) (Correct)

....the display a set based visualisation , as shown in Figure 1. **The visualisation is a compromise between the traditional node link diagrams found in techniques such as Robertson et al. s Cone Trees [4] and the enclosurebased approach of visualisations such as Johnson and Shneiderman s TreeMaps [5].** The visualisation style combines the node link display s ability to easily determine internal tree structures and the space efficient layout of enclosure methods. **Layouts** similar in approach, but different in execution and confined to one overall hierarchy, can be found by Stasko et al. [6] and ....

....as Bartram et al. s Continuous Zoom [15] where an object s absolute co ordinates depend on their neighbours positioning, rather than any global transformation function. **Specific examples involving hierarchical structures are, for the former, Hyperbolic Trees [16] and for the latter, TreeMaps [5].** These relative layout techniques depend on functions called Degrees Of Interest (DOI) associated with objects in the visualised structure e.g. for TreeMaps the DOI is traditionally the relative size of files within a visualised directory structure. Furnas [17] described a DOI as a function ....

B. Johnson and B. Shneiderman, "*Treemaps: A SpaceFilling approach to the visualization of hierarchical information structures*," Proc. IEEE Visualization '91, IEEE Computer Society Press, San Diego, California, USA, Oct 22-25, 1991, pp. 284-291.

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#### First Year Report in respect of ECFRC (4) - Visualising Multiple Overlapping (Correct)

.... **Jeong s [24] adaptation of Cone Trees tackled this problem, and other work tackled the problem of enhancing the perceptual cues used in Cone Trees, and advanced filtering and focusing mechanisms, namely Tversky et al. [25] and later, Carriere and Kazman [26] Johnson and Shneiderman s Treemaps [27] use a nested box metaphor for visualising trees which aims to be space efficient.** An area on screen is divided according to the number of top level nodes in a tree. **These divided areas are then sub divided according to the number of children of each node, and the process continues recursively ....**

....nodes. **Knowledge** of the other nodes or sub trees with which it shares relations in each version of a hierarchy will hint at the methodology behind that particular classification. **Turo and Johnson s visualisation technique, pictured in Figure 5. 3 and based on Johnson and Shneiderman s Treemaps [27], also includes an option to visualise change in trees or sub trees over time, again using the small multiple approach.** However, the changes they are concerned with are to do with information attached to individual nodes, rather than changes in the structure of the hierarchy. **Figure 5.3. Turo and ....**

Johnson, B. and Shneiderman, B., *Treemaps: A Space-Filling approach to the visualization of hierarchical information structures*, in Proc. IEEE Visualization '91, pp. 284-291, San Diego, California, USA, Oct 22-25, 1991. IEEE Computer Society Press.

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#### A Focus+Context Technique Based on Hyperbolic Geometry for .. - Lamping, Rao, Pirolli (1995) (14 citations) (Correct)

....Furthermore, trees with more than approximately 1000 nodes are difficult to manipulate. **The hyperbolic browser is two dimensional and has relatively modest computational needs, making it potentially useful on a broad variety of platforms. Another novel tree browsing technique is treemaps [5] which allocates the entire space of a display area to the nodes of the tree by dividing the space of a node among itself and its descendants according to properties of the node.** The space allocated to each node is then filled according to the same or other properties of the node. **This technique ....**

B. Johnson and B. Shnedierman. *Tree-maps: A spacefilling approach to the visualization of hierarchical information*. In Visualization1991, pages 284--291. IEEE, 1991.

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#### Bubble Trees - The Visualization Of (2000) (Correct)

....to improve on the traditional tree layout which suffers from the depth versus breadth problem. **Key** challenges include making efficient use of screen real estate, facilitating effective navigation and preventing information overload. **Much** progress has been made at tackling these issues. **Tree maps [3] use enclosure to visualize trees, mapping sub trees onto rectangular areas.** They provide a highly space efficient world view, but can suffer from information overload. **Hyperbolic trees [4] also improve space efficiency, through the use of noneuclidean geometry. Cone trees [5] use 3D techniques to ....**

Johnson, B. and Schneiderman, B., *Tree maps: a spacefilling approach to the visualization of hierarchical information structures*, in Proceedings of IEEE Visualization '91, IEEE CS Press, 275-282.

---

Information Visualisation using Composable Layouts and.. - Pattison, Vernik.. (2001) (Correct)

....real estate and requires the shifting of attention between it and the view of the original graph. **A conventional drawing of the cluster tree in the same view as the original graph would tend to defeat the goal of uncluttering the view. This dilemma can be resolved through the use of a Tree Map [Johnson and Schneiderman, 1991] in which each rectangle, corresponding to a non leaf node of the cluster tree, serves as a container for the display of not only the corresponding sub clusters, but also any leaf nodes, representing the vertices of the original graph.** In addition to the inherent space efficiency of the Tree Map, ....

....of the content of clusters and the interactive choice of a sub tree for display could be used to reduce the complexity of the display, as well as the computation required for layout. **Although the Tree Map was originally conceived as a summary view for an entire tree, the use of a Nested Tree Map [Johnson and Schneiderman, 1991] would allow the user access to internal nodes of the tree for the purposes of sub tree exploration and elision.** 2.3 Generalised layout The Tree Map uses an alternating pattern of horizontal and vertical linear layouts of rectangular containers. **To improve the flexibility and customisability of ....**

[Article contains additional citation context not shown here]

Johnson, B. and Schneiderman, B. (1991). *Tree-maps: A spacefilling approach to the visualization of hierarchical information structures*. In Proc. IEEE Visualization '91 Conf., pages 275--282. IEEE CS Press.

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Polyarchy Visualization: - Visualizing Multiple Intersecting (2002) (Correct)

....user interacts with hierarchies many times each day. **Over the last twenty years there has been much research on effective display and interaction with hierarchies: the Smalltalk File Browser in 1979 [13] Fisheye Views in 1986 [5] SemNet in 1986 [4] Cone Trees in 1991 [12] TreeMaps in 1991 [9]; Hyperbolic Browser in 1994 [10] FSViz in 1995 [2] H3 in 1997 [11] Disk Trees in 1998 [3] and many others.** In spite of all that research, we still have not solved some basic problems, particularly with scalability (loss of context for large hierarchies) and difficulty maintaining focus on ....

Johnson, B. & Shneiderman, B. *Tree-maps: A spacefilling approach to the visualization of hierarchical information*. In Visualization 1991, IEEE, 284-291.

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Animated Visualization of Multiple Intersecting.. - Robertson, Cameron.. (2002) (Correct)

....user interacts with hierarchies many times each day. **Over the last twenty years there has been much research on effective display and interaction with hierarchies: the Smalltalk File Browser in 1979 [19] Fisheye Views in 1986 [9] SemNet in 1986 [8] Cone Trees in 1991 [18] TreeMaps in 1991 [13]; Hyperbolic Browser in 1994 [14] FSViz in 1995 [5] H3 in 1997 [16] Disk Trees in 1998 [7] and many others.** In spite of all that research, we still have not solved some basic problems, particularly with scalability (loss of context for large hierarchies) and difficulty maintaining focus on ....

Johnson, B. & Shneiderman, B. *Tree-maps: A space-filling approach to the visualization of hierarchical information*. In Visualization 1991, IEEE, 284-291.

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The Structure of the Information Visualization Design Space - Card, Mackinlay (1996) (13 citations) (Correct)

....it is a good place to lay out exponentially expanding graphs, such as trees. **Table 8. Hyperbolic Browser (See Fig. 8) Name D F D X Y Z T R [ CP Set Nx N hb xxy L Trees can also be visualized as nested enclosures**

**NxN X: Y: Enclosure: Shneiderman and colleagues [16] have done a spacefilling form of enclosure tree called Tree Maps.** At one level in a tree, the children of a node divide up the X dimension of the visualization, at the next level they divide up the Y dimension of the node in which they are enclosed. **The** division proceeds alternating between X and ....

....from the image is essentially Retinal: Size coding, but the same Size can have many different visual manifestations, each with a different aspect ratio. **Thus** the space filling property of the visualization comes at a cost. **Fig. 7. Internet traffic [14] Fig. 8. Hyperbolic browser [15] Fig. 9. [16] SPECIAL DATA TRANSFORMS: TEXT** We have discussed some of the main classes of visualizations. But an important point to make is that techniques for transforming data types into the data forms that can be mapped into these visualizations are also important. **A** case in point is text. **Text** itself ....

B. Johnson and B. Shneiderman, "*Tree-maps: A Space-filling approach to the visualization of hierarchical information structures.*," in Proceedings of IEEE Visualization '91, 1991, pp. 284--291.

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Multi-Document Summarization and Visualization in the Informedia.. - Wactlar (2001) (Correct)

....and visual imagery and present a coherent story that unfolds along the temporal, spatial, or topical dimensions, as controlled by the user. **Information** layout is obviously important in building the video collages. **Information visualization techniques include Cone Trees [Robertson93] Tree Maps [Johnson91], Starfields [Ahlberg94a] dynamic query sliders [Ahlberg94b ] and VIBE [Olsen93] Visualizations such as LifeLines [Freeman95] Media Streams [Davis94] and Jabber [Kominek97] have represented temporal information along a timeline.** DiVA [Mackay98] has shown multiple timelines simultaneously for ....

Johnson, B., and Shneiderman, B. *Tree-Maps: A Space-Filling Approach to the Visualization of Hierarchical Information Structures*. Proc. IEEE Visualization '91, (San Diego, October), 284-291. New Directions in Video Information Extraction and Summarization -- Carnegie Mellon University 6

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Interactive Visualisation Techniques for Ontology Development - Ng (2000) (Correct)

....of the nodes, by allocating space for all subtrees at each level. **The** result is a 2.5D landscape like cone trees. **3.2. INTERACTIVE VISUALISATION TECHNIQUES** 93 Figure 3. **10: An example of ConeTree [131] Recognising that tree structured node link diagrams grow too large to be useful, Treemap [81] (Figure 3.11) uses a 2D space filling dividing approach to laying out hierarchies. Starting with a rectangular area representing a node, each level then divides the space of that node equally among its children, alternating between horizontal and vertical divisions. Originally designed to find ....**

....1:1 rectangle link 3 1:1 rectangle link 2.5 1:1 proximity 2 rectangle proximity 3 cube 1:1 sphere proximity 3 1:1 1:1 triangle proximity 2.5 1:1 various 2 link proximity 1:1 and 1:M point surface proximity 2.5 1:1 and 1:M cube surface 2. **5 link proximity FSN [159] ConeTree [131] Treemap [81] CHEOPS [9] Gem3D [61] Semnet [53] Commaide [48] Narcissus [77] VIBE [119] VR VIBE [12] Lyberworld [75] Beads [33] Nicheworks [171] Themescape [172] VxInsight [46] Attribute Explorer [162] XmdvTool [167] Prospection Matrix [164] Movable lens filters [58] Graphical Fisheye [137] ....**

JOHNSON,B.,AND SHNEIDERMAN, B. *Treemaps: a Space-Filling Approach to the Visualization of Hierarchical Information Structures*. In Proceedings of IEEE Visualization '91 (San Diego, CA, 1991), pp. 284--291.

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Laying out and Visualizing Large Trees Using a Hyperbolic Space - Lamping, Rao (1994) (22 citations) (Correct)

....larger hierarchies than conventional browsers with modest computational requirements. **It** supports up to 10 times as many nodes while providing more effective navigation around the hierarchy. **It should be more systematically compared with other novel browsers such as the Cone Tree[2] and Treemaps [1]. ....**

B. Johnson and B. Shnedierman. *Tree-maps: A spacefilling approach to the visualization of hierarchical information*. In Visualization

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MuSE: A Multiscale Editor - Furnas, Zhang (1998) (3 citations) (Correct)

....graphic editor, space scale diagram, authoring, ZUI INTRODUCTION From the Web to global GIS systems to corporate databases, the scale of information worlds continues to increase. **In recent years, various techniques have been devised to help deal with the resulting scale problems (e.g. 3)[4][6] 9] One of these is the use of of infinite extent, infinitely zoomable worksurfaces, like PAD [7] and PAD [1] sometimes called Multiscale Interfaces, or Zoomable User Interfaces (ZUIs) Dozens of developers around the country are building systems based on ZUIs. They have even begun to be used ....**

Johnson, Brian, and Shneiderman, Ben, *Tree-Maps: A space-filling approach to the visualization of hierarchical information structures*. Proceedings of IEEE Visualization'91, 1991, pp. 284-291.

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Analyzing Wireless Networks - Tang (2000) (1 citation) (Correct)

....a subset of snowflake schemas with only single, non branching lines of existence tables. **CHAPTER 6. VISUALIZATION** 80 Figure 6.4: Snowflake schema of the wireless network trace data. 6.3. **2 Related Work** **There has been a great deal of work on visualizing trees, including techniques from tree maps [30] to cone trees [51] to hyperbolic browsers [44] However, these techniques handle data that is itself a hierarchy, such as filesystems; our work is focused on visualizing data sets that are organized using hierarchical meta data, such as the schema shown in Figure 6.4. The Pad project [6] has ....**

Johnson, B. and Shneiderman, B. *Treemaps: A Space-filling Approach to the Visualization of Hierarchies*. Proceedings of IEEE Visualization

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Cartographic Considerations for Map-Like Interfaces to Digital.. - Skupin (2001) (Correct)

....spatialization methods typically amount to a tessellation of a given display surface. **Application** of the different tessellation techniques depend largely on the type of input data. **Hierarchically structured data, such as the Open Directory Project, call for tessellation using tree map methods [9].** Treemaps provide a complete tessellation, with areas of different sizes being assigned to leafs and nodes of the hierarchy. **Variation** of area sizes on treemaps is akin to what cartographers call cartograms, in which the size of geographic objects, such as individual countries, is changed to ....

Johnson, B., and Shneiderman, B. *Treemaps: A Space-Filling Approach to the Visualization of Hierarchical Information Structures*. in Proceedings of Visualization '91 (San Diego CA, October 1991), IEEE, 275-282.

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Dynamic 3D Visualization of Database-Defined Tree Structures.. - Noser, Stucki (Correct)

....databases and document collections, most notably applications, services, and electronic commerce for the Internet and its possible successors. **In particular, a 2D method for the visualization of hierarchically structured information the Tree Map visualization technique is described in [5].** A recent large scale application of 3D visualization is described in [6] The New York Stock Exchange (NYSE) where 38 billions in trades occur daily launched its 3D Tracking Floor in the Exchange s advanced operations center, which uses 3D computer graphics to monitor all business and ....

Johnson B., Shneidermann B., *Tree-maps: A SpaceFilling Approach to the Visualization of Hierarchical Information Structures*, Proceedings of IEEE Visualization'91 Conference, San Diego, 1991, pp. 284-291 (or also in [4]).

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Dynamic Fisheye Views: Combining Dynamic Queries and Mapping with.. - Noik (1996) (6 citations) (Correct)

.... **55, 81, 91, 111, 112, 113, 117, 145, 146] composite graph layout [66, 77, 96] incremental layout algorithms [12, 30, 87, 100, 101, 130] information hiding [23, 37, 101, 113, 120, 121] node clustering techniques [6, 13, 14, 38, 45, 49, 57, 66, 74, 85, 95] and visualization of hierarchies [16, 72, 73, 82, 112, 113, 127, 138].** A different solution has come in the form of a variety of overview diagrams (e.g. 56, 90, 102, 142) One approach is to present the user with two simultaneous views of the information space: a large zoomed window and a small overview window. **The overview window displays a simplified version ....**

....(Dist is geometric) by a non geometric FEV distortion (Dist is non geometric) or by scaling at single (local) or multiple (global) levels. **An adorned view emphasizes elements by varying other visual presentation variables such as colour, shading, line style and thickness, as well as audio [73], and motion (e.g. in**

between animation [111] vertical oscillations and small random movements [36] vibration or pulsing [124] Figure 3.1 shows a normal view of this taxonomy, while Figures 3.2, 3.3, and 3.4 show examples of other views of the same taxonomy. **Note** that many algorithms ....

[Article contains additional citation context not shown here]

B. Johnson and B. Shneiderman. *Tree-Maps: A Space-Filling Approach to the Visualization of Hierarchical Information Structures*. In IEEE Visualization '91, pages 284--291, San Diego, CA, October 1991.

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Modifiable Treemaps Containing Variable-Shaped Units - Vernier, Nigay (2000) (Correct)

....Display Algorithms; I.3.6 [Computer Graphics] Methodology and Techniques Interaction Techniques.

**Additional Keywords:** Visualization, Hierarchical Information, Treemap. 1 **MOTIVATION** We present a new visualization method of large hierarchical structures. **The method is based on nested Treemaps [3] but we do not apply the top down (or dice slice) approach of the classical Treemap algorithm.** For each node, our method allocates a bounding box according to a ratio (height width) that can be modified by the user. **For example if the ratio equals 1, the corresponding visualization will contain ....**

....Treemap algorithm. **For each node, our method allocates a bounding box according to a ratio (height width) that can be modified by the user. For example if the ratio equals 1, the corresponding visualization will contain bounding boxes that tend to be squares. Instead the Treemap visualization [3] portrays each node as a rectangle.** This visualization technique may not be appropriate for certain user tasks or for certain kind of information: BP 53, 38041 Grenoble cedex 9 France frederic.vernier, laurence.nigay imag.fr . Long but thin rectangles are difficult to select. **The Fitts law ....**

[Article contains additional citation context not shown here]

B. Johnson and B. Shneiderman, *Treemaps: A SpaceFilling Approach To The Visualization Of Hierarchical Information Structures*. In Proceedings of Visualization'91 (San Diego, October, 1991), pages 284-291.

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Considerations for Information Environments and the NaviQue .. - George Furnas School (1998) (6 citations) (Correct)

....of how DM can be used in information environments. **Information Visualization. Information** visualization has provided new tools for working with large amounts of information. **Tools** for viewing the large structure of information worlds have greatly matured. **Structure browsers such as TreeMaps[12] or the Perspective Wall [14] provide means for viewing the ever growing bodies of information in a meaningful manner.** The concept of Lenses [5] provides the user with the ability to look at particular portions of an information world in different ways. **For example, a library collection displayed ....**

Johnson, Brian, and Shneiderman, Ben, *Tree-Maps: A Space-Filling Approach to the Visualization of Hierarchical Information Structures*. Proceedings of IEEE Visualization '91, 1991, 284-291.

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Squarified Treemaps - Bruls, Huizing, van Wijk (1999) (5 citations) (Correct)

....hierarchical structures are effective to locate information, but the content and organization of large structures is harder to grasp. **We present a new visualization method for large hierarchical structures: Squarified Treemaps. The method is based on Treemaps, developed by Shneiderman and Johnson [9, 6].** Treemaps are efficient and compact displays, which are particularly effective to show the size of the final elements in the structure. In a previous paper [10] we introduced Cushion Treemaps, which provide shading as an extra cue to emphasize the hierarchical structure. **In this paper we attack ....**

....main reason for this limitation is simply that node and link diagrams use the display space inefficiently: Most of the pixels are used as background. **Treemaps** a16 e1 f2 g2 h4 i4 b3 c3 d10 j1 k1 l1 m1 n1 o1 (a) Tree diagram e1 f2 c3 h4 j1 k1 l1 m1 n1 o1 (b) Treemap Fig. 1. **Tree diagram [9, 6] were developed to remedy this problem.** The full display space is used to visualize the contents of the tree. **Here we present an overview of the concept, an in depth treatment is given in the original references. Figure 1(b) shows an example. Each node (as shown in the tree diagram) has a name (a ....**

[Article contains additional citation context not shown here]



B. Johnson and B. Shneiderman. *Treemaps: a space-filling approach to the visualization of hierarchical information structures*. In Proc. of the 2nd International IEEE Visualization Conference, pages 284--291, October 1991.

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An Operator Interaction Framework for Visualization Systems - Chi, Riedl (1998) (2 citations) (Correct)

....operation) The breadth first traversal generates a visualization abstraction, a hierarchical tree of the web pages, that can be easily visualized. **There are many visual mapping techniques that can be applied to this visualization abstraction, such as Cone Tree [27] Disk Tree [9] TreeMap [16], Hyperbolic Tree [17] Within View Stage Operators such as focusing and brushing nodes, or rotating the cone tree can then be applied to this visualized content.** 4 Analysis of Operators with the Framework 4.1 Classification of Operators Using the above model, we can classify operators ....

.... by reducing number of regions **Network: simplify by consolidating nodes Hierarchy: cut off depth of tree Visual Mapping Transformation Operators (VMTO) Point set: scatter plot Multi dimensional Surfaces: World within World, Hierarchy: Cone trees [27] Hyperbolic Trees [25] TreeMaps [16] and Disk Trees [9] Network: GV3D [1] NVB [22] SeeNet [4] View Stage Operators (VSO) Object Manipulation: rotation, translation, scale, zoom Camera: position and orientation General: view filter 4.2 Why is this framework powerful This operator model provides a classification that is ....**

[Article contains additional citation context not shown here]

B. Johnson and B. Shneiderman. *Tree-maps: A space-filling approach to the visualization of hierarchical information structures*. In Proc. IEEE Visualization '91, pages 284--291, Piscataway, NJ, 1991. IEEE.

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Visualizing Digital Library Search Results with.. - Shneiderman.. (1999) (6 citations) Self-citation (Ben) (Correct)

....(Nation et al. 1997) Trees represented as node link diagrams are useful, but as they grow to include thousands of nodes and many levels, layout and navigation problems become serious. **Treemaps ensure a fixed size presentation, but are complex, and many users require 15 20 minutes of training (Johnson and Shneiderman, 1991).** Allen (1995b) described two facet space browsers for exploring multi hierarchical (multi dimensionally hierarchical) data sets. **However**, these tools did not allow users to view their data along categorical axes. **On** an axis, a hierarchy must be represented one dimensionally, so we chose the ....

Johnson, Brian, and Shneiderman, Ben, *Tree-maps: A space-filling approach to the visualization of hierarchical information structures*, Proc. IEEE Visualization'91, IEEE, Piscataway, NJ (1991), 284--291.

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SpaceTree: Supporting Exploration in Large Node Link Tree, - And (Correct)

No context found.

Johnson, B. and Shneiderman, B. (1991) *Tree-maps: A space-filling approach to the visualization of hierarchical information structures*, Proc. IEEE Visualization' 91 (1991), 284 -- 291, IEEE, Piscataway, NJ.

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### Search Results -

Terms	Documents
(hierarchy\$6 with generat\$5 with schema)	6

**Database:**

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**Search:**

L16





### Search History

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<u>Set Name</u> side by side	<u>Query</u>	<u>Hit Count</u>	<u>Set Name</u> result set
<i>DB=USPT; THES=ASSIGNEE; PLUR=YES; OP=OR</i>			
<u>L16</u>	(hierarchy\$6 with generat\$5 with schema)	6	<u>L16</u>
<u>L15</u>	(hierarchy\$6 and (generat\$5 with schema))	203	<u>L15</u>
<i>DB=PGPB,USPT,USOC,EPAB,JPAB,DWPI,TDBD; THES=ASSIGNEE; PLUR=YES; OP=OR</i>			
<u>L14</u>	hierarchy\$6 and (generat\$5 with schema)	408	<u>L14</u>
<u>L13</u>	polyarchy	8	<u>L13</u>
<u>L12</u>	polyarch\$9	10	<u>L12</u>
<u>L11</u>	polyarch\$6	10	<u>L11</u>
<i>DB=PGPB; THES=ASSIGNEE; PLUR=YES; OP=OR</i>			
<u>L10</u>	L5 and schema	0	<u>L10</u>
<u>L9</u>	L8 and polyarch\$4	1	<u>L9</u>
<u>L8</u>	L5 and (develop\$4 or creat\$4 or generat\$4)	1	<u>L8</u>
<u>L7</u>	L5 and dynamic\$5	0	<u>L7</u>

<u>L6</u>	L5 and dinamic\$5	0	<u>L6</u>
<u>L5</u>	20020169744	1	<u>L5</u>
<i>DB=USPT; THES=ASSIGNEE; PLUR=YES; OP=OR</i>			
<u>L4</u>	L2 and hierarch\$4	1	<u>L4</u>
<u>L3</u>	L2 and polyarch\$4	0	<u>L3</u>
<u>L2</u>	(6088699, 6163780, 6223182, 6457014, 6535869).pn.	5	<u>L2</u>
<u>L1</u>	4760526.pn.	1	<u>L1</u>

END OF SEARCH HISTORY